State of California—Health and Human Services Agency
Department of Health Services

California Department of Health Services
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Director

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Date: February 9, 2007 IZB-FY0607-06

TO: California Vaccines for Children (VFC) Program Providers

FROM: Howard Backer, M.D., M.P.H., Chief
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SUBJECT: Recommended Immunization Schedules, 2007
ACIP General Recommendations on Immunization, 2006

## SUMMARY

The Advisory Committee on Immunization Practices (ACIP), in coordination with the American Academy of Pediatrics (AAP) and American Academy of Family Practice (AAFP), periodically reviews immunization schedules to ensure that they reflect the most recent recommendations. The Childhood and Adolescent Immunization Schedules for 2007 were published in the Morbidity and Mortality Weekly Report (MMWR) January 5, 2007, 55(51); Q1-Q4.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5551a7.htm?s_cid=mm5551a7_e

An errata to the Childhood and Adolescent Recommendations was published in the MMWR January 19, 2007, 56(2); 32. which corrects a footnote on varicella intervals.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5602a6.htm

Approximately every three to five years ACIP revises the General Recommendations on Immunization Practice, which serve as a general reference on vaccines and immunizations. The latest version of this document was published in the MMWR December 1, 2006, 55(RR15); 1-48.
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5515a1.htm?s_cid=rr5515a1_e

An errata to the General Recommendations was published in the MMWR December 8, 2006, 55(48); 1303-1304 which corrected a significant error in the recommended temperatures for storage of frozen vaccines. The correct temperature for frozen vaccines is **≤ 5º F or ≤ -15º C.**
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5548a7.htm

The California Department of Health Services (CDHS), Immunization Branch endorses these recommendations and encourages all providers to review these two documents and integrate the schedules and recommendations into routine practice. In addition, we encourage you share and discuss this information with your staff.

Special attention should be paid to vaccine storage, handling, and administration. Many inactivated vaccines are especially vulnerable to damage when exposed to freezing temperatures. Dormitory-style refrigerators (units with a small freezer compartment in the unit should **not** be used to store vaccines. With the increased number of vaccines and expanding production of single-dose, pre-filled vaccine in glass syringe presentations, additional vaccine storage space will be needed. We strongly encourage you evaluate your current vaccine storage and office vaccine management. Combination refrigerator/freezer units with separate doors and temperature controls that accurately maintain proper temperatures may be acceptable for limited quantities of vaccine storage. However, serious consideration should be given to storing refrigerated vaccines in refrigerators with out freezers or with the freezer unit turned off and to storing frozen vaccines in a stand-alone freezer unit. These units are usually better able to maintain the precise temperatures required for vaccine storage. In addition, they provide additional storage space to hold your highest seasonal inventory of vaccines, particularly during influenza season. Improper storage and handling of vaccine leads to inadvertent administration of ineffective doses, vaccine wastage and significant financial loss, with high costs to patients and purchasers.

## BACKGROUND

ACIP consists of 15 experts in fields associated with immunization who have been selected by the Secretary of the U. S. Department of Health and Human Services to provide advice and guidance to the Secretary, the Assistant Secretary for Health, and the Centers for Disease Control and Prevention (CDC) on the most effective means to prevent vaccine-preventable diseases. ACIP is the only entity that advises the federal government on such recommendations.

## RECOMMENDATIONS

### Immunization Schedules

The routine childhood and adolescent immunization schedules reflect agreement among members of the AAP, AAFP, and ACIP. The harmonized immunization recommendations help to assure that all children are immunized using the same schedule and are a benchmark for insurers and health plans to measure practice compliance and quality.

There are several significant changes to the previous childhood and adolescent immunization schedule, published in January, 2006:

- The main change to the format of the schedule is the division of the recommendation into two schedules: one schedule for persons age 0 to 6 years and another for persons age 7-18 years. Special populations are represented with purple bars; the 11-12 years assessment is emphasized with bold, capitalized fonts in the title of that column. Schedules for rotavirus (Rota), HPV, and the updated schedule for varicella vaccine are incorporated in the catch-up immunization schedule.
- The Rota vaccine is recommended in a three-dose schedule at ages 2, 4, and 6 months. The first dose should be administered at ages 6 weeks through 12 weeks with subsequent doses administered at 4-10 week intervals. Rotavirus vaccination should not be initiated for infants who are older than 12 weeks and should not be administered after age 32 weeks.
- The influenza vaccine is now recommended for all children aged 6-59 months.
- Varicella vaccine recommendations are updated. The first dose should be administered at age 12-15 months, and a newly recommended second dose should be routinely administered at age four to six. Catch-up second dose is displayed on the schedule of Ages 7-18.
- The new human papillomavirus vaccine (HPV) is recommended in a three-dose schedule with the second and third doses administered two and six months after the first dose. Routine vaccination with HPV is recommended for females aged 11-12 years; the vaccination series can be started in females as young as 9 years of age. Although catch-up vaccination is recommended by ACIP for females aged 13-26 years who have not been vaccinated previously or who have not completed the full vaccine series, catch-up vaccination for VFC-eligible females is recommended only through 18 years of age.

**General Recommendations on Immunization Practice**

There are several significant changes to the previous General Recommendations, published in 2002:

- Expansion of vaccine spacing and timing discussion
- Increased emphasis on the importance of injection technique/age/body mass in determining appropriate needle length
- Expansion of the discussion of storage and handling of vaccines, with a table defining the appropriate storage temperature range for inactivated and live vaccines

- Expansion of the discussion of altered immunocompetence, including new recommendations about the use of live-attenuated vaccines with therapeutic monoclonal antibodies
- Minor changes to the recommendations about vaccination during pregnancy and vaccination of internationally adopted children

The most recent ACIP recommendations for each specific vaccine should be consulted for a more specific and comprehensive discussion.

**Vaccine Information Statements**

As required by the National Childhood Vaccine Injury Act, healthcare providers must provide parents or patients with copies of Vaccine Information Statements (VIS) prior to the administration of each dose of the vaccines listed in the schedule. Additional information is available from CDC at http://www.cdc.gov/nip/publications/vis. Vaccine Information Statements in other languages other than English may be found at http://www.immunize.org/vis/index.htm#index.

Enclosures : 2007 Schedule

cc: DHS, Immunization Branch Field Representatives
Local Health Department CHDP Program Directors
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# Recommended Immunization Schedule for Ages 0–6 Years UNITED STATES • 2007

| Vaccine ▼ / Age ▶ | Birth | 1 month | 2 months | 4 months | 6 months | 12 months | 15 months | 18 months | 19–23 months | 2–3 years | 4–6 years |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hepatitis B[1] | HepB | HepB | | *see footnote 1* | HepB | | | | HepB Series | | |
| Rotavirus[2] | | | Rota | Rota | Rota | | | | | | |
| Diphtheria, Tetanus, Pertussis[3] | | | DTaP | DTaP | DTaP | | DTaP | | | | DTaP |
| *Haemophilus influenzae* type b[4] | | | Hib | Hib | *Hib*[4] | Hib | | Hib | | | |
| Pneumococcal[5] | | | PCV | PCV | PCV | PCV | | | | PCV | |
| | | | | | | | | | | PPV | |
| Inactivated Poliovirus | | | IPV | IPV | IPV | | IPV | | | | IPV |
| Influenza[6] | | | | | Influenza (Yearly) | | | | | | |
| Measles, Mumps, Rubella[7] | | | | | | MMR | | | | | MMR |
| Varicella[8] | | | | | | Varicella | | | | | Varicella |
| Hepatitis A[9] | | | | | | HepA (2 doses) | | | | HepA Series | |
| Meningococcal[10] | | | | | | | | | | MPSV4 | |

Range of recommended ages
Catch-up immunization
Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children through age 6 years. For additional information see www.cdc.gov/nip/recs/child-schedule.htm. Any dose not administered at the recommended age should be administered at any subsequent visit when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective ACIP statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at www.vaers.hhs.gov or by telephone, 800-822-7967.

# Recommended Immunization Schedule for Ages 7–18 Years UNITED STATES • 2007

| Vaccine ▼ / Age ▶ | 7-10 years | 11–12 YEARS | 13–14 years | 15 years | 16–18 years |
|---|---|---|---|---|---|
| Tetanus, Diphtheria, Pertussis[1] | *see footnote 1* | Tdap | Tdap | | |
| Human Papillomavirus[2] | *see footnote 2* | HPV (3 doses) | HPV Series | | |
| Meningococcal[3] | MPSV4 | MCV4 | MCV4 | MCV4[3] | |
| Pneumococcal[4] | PPV | | | | |
| Influenza[5] | Influenza (Yearly) | | | | |
| Hepatitis A[6] | HepA Series | | | | |
| Hepatitis B[7] | HepB Series | | | | |
| Inactivated Poliovirus[8] | IPV Series | | | | |
| Measles, Mumps, Rubella[9] | MMR Series | | | | |
| Varicella[10] | Varicella Series | | | | |

Range of recommended ages
Catch-up immunization
Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 7–18 years. For additional information see www.cdc.gov/nip/recs/child-schedule.htm. Any dose not administered at the recommended earlier age should be administered at any subsequent visit when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective ACIP statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at www.vaers.hhs.gov or by telephone, 800-822-7967.

The Childhood and Adolescent Immunization Schedule is approved by:
Advisory Committee on Immunization Practices www.cdc.gov/nip/acip • American Academy of Pediatrics www.aap.org • American Academy of Family Physicians www.aafp.org

## Footnotes: Recommended Immunization Schedule for Ages 0-6 Years

**1. Hepatitis B vaccine (HepB).** *(Minimum age: birth)*

**At birth:**

- Administer monovalent HepB to all newborns prior to hospital discharge.
- If mother is HBsAg-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
- If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine the HBsAg status as soon as possible and if HBsAg-positive, administer HBIG (no later than age 1 week).
- If mother is HBsAg-negative, the birth dose can only be delayed with physician's order and mothers' negative HBsAg laboratory report documented in the infant's medical record.

**Following the birth dose:**

- The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1–2 months. The final dose should be administered at age ≥24 weeks. Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg after completion of 3 or more doses in a licensed HepB series, at age 9–18 months (generally at the next well-child visit).

**4-month dose of HepB:**

- It is permissible to administer 4 doses of HepB when combination vaccines are given after the birth dose. If monovalent HepB is used for doses after the birth dose, a dose at age 4 months is not needed.

**2. Rotavirus vaccine (Rota).** *(Minimum age: 6 weeks)*

- Administer the first dose between 6 and 12 weeks of age. Do not start the series later than age 12 weeks.
- Administer the final dose in the series by 32 weeks of age. Do not administer a dose later than age 32 weeks.
- There are insufficient data on safety and efficacy outside of these age ranges.

**3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).** *(Minimum age: 6 weeks)*

- The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose.
- Administer the final dose in the series at age 4–6 years.

**4. *Haemophilus influenzae* type b conjugate vaccine (Hib).** *(Minimum age: 6 weeks)*

- If PRP-OMP (PedvaxHIB® or ComVax® [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required.
- TriHiBit® (DTaP/Hib) combination products should not be used for primary immunization but can be used as boosters following any Hib vaccine in ≥12 months olds.

**5. Pneumococcal vaccine.** *(Minimum age: 6 weeks for Pneumococcal Conjugate Vaccine (PCV); 2 years for Pneumococcal Polysaccharide Vaccine (PPV))*

- Administer PCV at ages 24-59 months in certain high-risk groups. Administer PPV to certain high-risk groups aged ≥2 years. See *MMWR* 2000; 49(RR-9):1-35.

**6. Influenza vaccine.** *(Minimum age: 6 months for trivalent inactivated influenza vaccine (TIV); 5 years for live, attenuated influenza vaccine (LAIV)*

- All children aged 6–59 months and close contacts of all children aged 0–59 months are recommended to receive influenza vaccine.
- Influenza vaccine is recommended annually for children aged ≥59 months with certain risk factors, healthcare workers, and other persons (including household members) in close contact with persons in groups at high risk. See *MMWR* 2006; 55(RR-10);1-41.
- For healthy persons aged 5–49 years, LAIV may be used as an alternative to TIV.
- Children receiving TIV should receive 0.25 mL if aged 6–35 months or 0.5 mL if aged ≥3 years.
- Children aged <9 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by ≥4 weeks for TIV and ≥6 weeks for LAIV).

**7. Measles, mumps, and rubella vaccine (MMR).** *(Minimum age: 12 months)*

- Administer the second dose of MMR at age 4–6 years. MMR may be administered prior to age 4–6 years, provided ≥4 weeks have elapsed since the first dose and both doses are administered at age ≥12 months.

**8. Varicella vaccine.** *(Minimum age: 12 months)*

- Administer the second dose of varicella vaccine at age 4–6 years. Varicella vaccine may be administered prior to age 4–6 years, provided that ≥3 months have elapsed since the first dose and both doses are administered at age ≥12 months. If second dose was administered ≥28 days following the first dose, the second dose does not need to be repeated.

**9. Hepatitis A vaccine (HepA).** *(Minimum age: 12 months)*

- HepA is recommended for all children at 1 year of age (i.e., 12–23 months). The 2 doses in the series should be administered at least 6 months apart.
- Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
- HepA is recommended for certain other groups of children including in areas where vaccination programs target older children. See *MMWR* 2006; 55(RR-7):1-23.

**10. Meningococcal polysaccharide vaccine (MPSV4).** *(Minimum age: 2 years)*

- Administer MPSV4 to children aged 2–10 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high risk groups. See *MMWR* 2005;54 (RR-7):1-21.

## Footnotes: Recommended Immunization Schedule for Ages 7-18 Years

**1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).**

*(Minimum age: 10 years for BOOSTRIX® and 11 years for ADACEL™)*

- Administer at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a Td booster dose.
- Adolescents 13–18 years who missed the 11–12 year Td/Tdap booster dose should also receive a single dose of Tdap if they have completed the recommended childhood DTP/DTaP vaccination series.

**2. Human papillomavirus vaccine (HPV).** *(Minimum age: 9 years)*

- Administer the first dose of the HPV vaccine series to females at age 11–12 years.
- Administer the second dose 2 months after the first dose and the third dose 6 months after the first dose.
- Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.

**3. Meningococcal vaccine.** *(Minimum age: 11 years for meningococcal conjugate vaccine (MCV4); 2 years for meningococcal polysaccharide vaccine (MPSV4))*

- Administer MCV4 at age 11–12-years and to previously unvaccinated adolescents at high school entry (~15 years of age).
- Administer MCV4 to previously unvaccinated college freshmen living in dormitories; MPSV4 is an acceptable alternative.
- Vaccination against invasive meningococcal disease is recommended for children and adolescents aged ≥2 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high risk groups. See *MMWR* 2005;54 (RR-7):1-21. Use MPSV4 for children aged 2–10 years and MCV4 or MPSV4 for older children.

**4. Pneumococcal polysaccharide vaccine (PPV).** *(Minimum age: 2 years)*

- Administer for certain high-risk groups. See *MMWR* 1997; 46(RR-08); 1–24 and *MMWR* 2000; 49(RR-9):1-35.

**5. Influenza vaccine.** *(Minimum age: 6 months for trivalent inactivated influenza vaccine (TIV); 5 years for live, attenuated influenza vaccine (LAIV)*

- Influenza vaccine is recommended annually for persons with certain risk factors, healthcare workers, and other persons (including household members) in close contact with persons in groups at high risk. See *MMWR* 2006; 55(RR-10);1-41.
- For healthy persons aged 5–49 years, LAIV may be used as an alternative to TIV.
- Children aged <9 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by ≥4 weeks for TIV and ≥6 weeks for LAIV).

**6. Hepatitis A vaccine (HepA).** *(Minimum age: 12 months)*

- The 2 doses in the series should be administered at least 6 months apart.
- HepA is recommended for certain other groups of children including in areas where vaccination programs target older children. See *MMWR* 2006; 55(RR-7):1-23.

**7. Hepatitis B vaccine (HepB).** *(Minimum age: birth)*

- Administer the 3-dose series to those who were not previously vaccinated.
- A 2-dose series of Recombivax HB® is licensed for 11–15 year olds.

**8. Inactivated poliovirus vaccine (IPV).** *(Minimum age: 6 weeks)*

- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was administered at age ≥4 years.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be given, regardless of the child's current age.

**9. Measles, mumps, and rubella vaccine (MMR).** *(Minimum age: 12 months)*

- If not previously vaccinated, administer 2 doses of MMR during any visit with ≥4 weeks between the doses.

**10. Varicella vaccine.** *(Minimum age: 12 months)*

- Administer 2 doses of varicella vaccine to persons without evidence of immunity.
- Administer 2 doses of varicella vaccine to persons aged ≤13 years at least 3 months apart. Do not repeat the second dose, if administered ≥28 days following the first dose.
- Administer 2 doses of varicella vaccine to persons aged ≥13 years at least 4 weeks apart.